

TWO YEARS IN CALIFORNIA.

CHAPTER I.

CLIMATE.

TEMPERATURE and rainfall are the essential elements of climate. This twofold influence affects so potently the conditions of life in California, that some consideration of the subject, in the way of a preliminary, seems quite in order.

That isothermal lines stretched across the continent do not coincide with parallels of latitude is a fact well established, and yet is more generally accepted than understood. The northern end of the island of Vancouver, in latitude 51° , has the same winter temperature as Norfolk, Va., in latitude 37° . In Olympia, at the head of Puget Sound, latitude 49° , bouquets containing fifteen or twenty varieties of flowers are gathered from the open grounds to ornament the Christmas tables, and the inhabitants are obliged to send to the Aleutian islands, eighteen hundred miles away, to get their supply of ice for summer use.

San Francisco, in latitude 38° , has a mean annual temperature of 56° Fahrenheit. All that is implied in this is not at once evident. There are but eight degrees difference between the mean temperature of the summer and

the winter. Although there are occasional frosts, the ground is never stiffened by cold, and ice is never formed thicker than the glass of the window, while delicate exotics, such as fuchsias, calla-lilies, verbenas, pinks, geraniums and roses, continue to delight the eye and gladden the heart by spreading out their beauty in the open grounds all the year round. Even when the frost comes it does not seem to affect the flowers and plants as it does elsewhere. Jack Frost may sprinkle the rosebush all over with his white crystals, and almost encase the pinks and lilies in a covering of white, yet when the sun has compelled him to withdraw and has scattered his handiwork, the flowers hold up their heads as proudly and wear their beautiful tints as gaily as though nothing had happened. It may be that enough caloric has been stored away in the earth about the roots, while the sun was shining, to keep the plants from being chilled, and they have, as a consequence, an unusual power of resistance.

In all climatic conditions the difference between the eastern and western sides of the continent is so great that there are few observers so superficial as not to inquire, What occasions this dissimilarity? Why does nature smile so much more benignantly upon the latter than the former? The fact that said nature is of the feminine gender, and ought not, therefore, to be expected to have any better reason than "because" for any way of working that she chooses, is scarcely philosophical enough for those who indulge in the luxury of thinking. When the matter is investigated it will be found, as is often true, that where there seems to be only a whim there is actually a reason. In the present instance this cause is doubly blessed, for it

has two reasons for being. One of these is in the air, the other in the water. Either of these forces working alone would be potential enough to bring about great results; entering into partnership and uniting their capacities, they accomplish what seems to be almost a miracle. In the two influences, the direction of the winds and the Japan current, will be found ample reason for the great difference in the temperature upon the same parallel of latitude, on the two sides of the continent. Working with or against these principal powers, there are many local causes, such as the elevation or direction of mountain ranges, and the occurrence of passes or openings through them, which turn aside or check, or increase, the strength of the winds, and so occasion partial departures from general laws. Throwing out of consideration these exceptional cases, it may be well to consider, more in full, the workings of the two grand and overmastering causes.

It is well known that heat expands atmospheric air and makes it lighter, and that the lighter air always shows a disposition to rise above the heavier. Hence when the sun shines vertically, as at the equator, the air becomes heated and ascends, while the colder air from the north and south flows in to fill the vacuum. If the earth were motionless, there would be, consequently, surface currents from the north and south toward the equator, and upper currents from the equator toward the poles. But as the rotary motion of the earth from west to east is communicated to its atmosphere, and as in the equatorial regions, where the process of rarefaction is most active, this eastward motion is necessarily the greatest, the combined effects of this rotary motion and the movement to and from the poles is

to give the air-currents an oblique direction, those on the surface tending from the northeast to the southwest, and the upper currents from the southwest to the northeast. But this latter wind will not be felt anywhere near the equator, because it is an upper current, and so continues until, by a gradually cooling process, it parts with enough of its caloric to come down and take its place as a surface current. In the winter, when the sun is south of the equator, this result will happen in about latitude 30° . In the summer, when the sun is north of the equator, this southwest wind does not come to the surface below latitude 65° or 70° , unless it chance to meet with some unusual obstruction. These several causes working together—the action of the sun's rays, the turning of the earth upon its axis and its revolution round the sun, together with the inclination of the earth's axis—would be expected, reasoning *a priori*, to produce exactly such results as are actually found to exist, viz.: calms, variable winds and vertical currents about the equator, northeast winds from there to latitude 25° or 30° , variable winds where the southwest and northeast winds strive together for the mastery, and northwest winds beyond the scene of conflict.

The Pacific ocean being larger than any other even, spherical surface upon the face of our globe is, as a consequence, less affected by irregularities and disturbances from without. Like all great bodies, it has such confidence in its own power that it can afford to be indifferent to insults that may be offered by outside insignificance, and remain placid under almost any provocation. Hence it is able to show the legitimate influence of solar heat and the

earth's motion in producing atmospheric and oceanic currents. As the prevailing winds of the temperate zone are westerly, that region which is blown upon by the winds that come over this great, calm, placid and equable ocean should have a milder and more equable climate than countries which have a different geographical position. Precisely this result is found to take place.

From the equator to latitude 12° or 15° there is but little wind, and that is variable. From thence to latitude 25° the northeast trades prevail. In winter the upper southerly currents begin to come to the surface at about this point, and as they move in a direction opposite to the northeast trades, they beat these back and produce a belt of variable winds that extends to about latitude 32° . Beyond this limit, northward, the southwest winter winds, which have now reached the surface in full force, sweep forward regularly when not obstructed by surface elevations. These southwest winds, coming over the even, tranquil surface of the great Pacific ocean, bring with them the mild, equable temper which the ocean has imparted to them, and make cool or warm, according to the needs of the case, whatever part of the continent they reach. In winter the ocean is warmer, and in summer cooler, than the land contiguous to it, so that in either instance these winds are messengers of comfort to those on the land, bringing heat or cold according to the season.

As the sun moves northward over the equator, and spring gives place to summer, the southwest winter winds gradually die out, or, rather, go northward, leaving first those places where they first appeared, which is about latitude 32° . In the autumn their course is reversed, their

journey commencing in the opposite direction. They strike the earth far to the north, and come down, as the sun gets farther and farther south of the equator, until they sweep along the whole coast, as far as latitude 32° again.

The southwest winds having followed the sun in its movement toward the south pole, the coast is clear for the northwest winds to show their power. They improve their opportunity, and from June till October have matters pretty much their own way. These winds come from a high latitude, and over a small, cold ocean. As a consequence, they are both cool and dry, and so have power over quite a range of latitude, to modify the influence of a nearly vertical sun, and reduce the temperature from what it would be without their influence to a mean of about 64° in the daytime, and make the nights especially cool and delightful. When the wind, however, is directly from the north, and comes down over the heated valleys lying inland, and has no chance to be modified by the influence of the ocean, it is a withering, scorching blast, that feels as though it had come straight from the mouth of a furnace.

The other influence that coöperates with these comforting winds, and helps them to produce the delightful climate of the Pacific coast, is the Japan current.

The nature and influence of the gulf stream in the Atlantic ocean have been long understood. It is due to its beneficence that Great Britain, lying between 50° and 59° north latitude, is redeemed from the cold and sterility of Labrador, which lies, in part, in the same latitude. It is a well-known and established fact that the climate of all Western Europe is far more amiable and kindly than that of countries lying in corresponding parallels of latitude on

the eastern coast of America, and that to the potent influence of the gulf stream this difference is due.

The power of the Japan current is as much greater and more beneficent than that of the gulf stream as the ocean in which it has its origin is grander and more placable than that which is the home of the gulf stream. The current takes its rise in the Indian ocean, being heated by the vertical sun of the tropics, and flows northward along the eastern coast of Asia, warming the countries it finds on its way, and giving particular attention to the comfort of those who dwell on the islands of Japan. At length it comes in contact with the peninsula of Alaska and the Aleutian islands. Breaking with great force upon these obstructions to its onward movement, the current is divided. After the division, one part moves northward through Behring's Straits, and, probably, helps to make the open polar sea. The other part comes down along the western coast of America, hugging it closely, and generously imparting warmth and comfort as it flows along toward the south. The region bordering upon Puget Sound is blessed beyond any other by this beneficent power. Twice each day, with the rise of the tide, immense quantities of this warm water flow into Puget Sound through the straits of Juan de Fuca, and, like the steam-pipes through which steam is sent from a furnace over a house, the tepid water continually dispenses its heat, and so warms the country that flowers can bud and bring forth blossoms to beautify the Christmas tables; hence the climate of the country is altogether unlike what its contiguity to the north pole would make it reasonable to expect. But the beneficence of the Japan current does not stop here.

Like the apparatus in our congressional halls, it accomplishes a double purpose. That which serves for heating in winter serves also for cooling in summer. There are but two degrees difference in the temperature of the Japan current in winter and summer. The winter temperature is 50°, that of summer 52°. It is, therefore, greatly cooler in summer than the surrounding atmosphere; and whereas in winter it warms, in summer it cools, the region round about.

So great is the volume of this Japan current, and so economical is it in the use of its resources, that in all its long journey the variation in the temperature of its waters is comparatively slight. The distance between Queen Charlotte's Islands and San Francisco is two thousand miles; yet throughout the whole the difference in the temperature of the water is but two degrees. Thus the entire western coast of North America has an almost equal share in the benefits of this mighty ocean stream.

CHAPTER II.

RAIN-FALL.

THERE is not the same equality in the amount of rain-fall, or precipitation of moisture, on the Pacific coast that there is in temperature. Going from the north to the south, the amount diminishes in a direct ratio. In Washington Territory and in Oregon the clouds get into such a habit of weeping that it seems to be their normal condition, but they "dry up" more and more toward the equator until in southern California they make but very stingy deposits.

It is pleasant to know that, though "the wind bloweth where it listeth," and seems to be altogether a lawless thing, and the rain appears to come in an entirely independent and irresponsible manner, when we look into the matter we find that both are chained to the chariot of Him who is above them both, and who has ordained laws which they can neither transcend nor transgress.

Even in the seven hundred miles through which California extends, north and south, the difference is so great as to excite inquiry in the minds of the most unthinking.

In Shasta city in northern California, between November and April, the rain-fall in 1871-2 reached eighty inches, while in San Diego, in the southern extremity of the State, during the same time, it was only ten inches. There are seasons when it even falls short of this. San

Francisco, situated between the two extremes, has an average rain-fall of twenty-two inches. Local causes sometimes occasion a departure from general rules and increase the disparity. In Hoopa Valley, Klamath county, the enormous quantity of one hundred and twenty-nine inches is reported to have fallen in one season, while at Fort Yuma, in the southeastern extremity of San Diego county, the average annual rain-fall is only about three inches, and in exceptional seasons it is even less, while there are said to be places in the State where there is no rain at all.

It may be interesting to get at the secret of these apparently strange differences.

That secret is bound up in the same bundle which contains the mysteries in regard to the direction of the winds, and the causes which control them. Untie the one, and the other is found.

All the western portion of the continent derives its moisture from the Pacific ocean. The wind sweeping over the sea gathers up the particles of moisture and carries them in its bosom until some extraneous influence is brought to bear upon it to compel it to give up its treasure. Then, as it goes hither and thither, it scatters these riches, and therewith makes the earth glad and causes it to bring forth, that it may give seed to the sower and bread to the eater.

It is a well-known fact that the capacity of atmospheric air to absorb and retain moisture is increased or diminished in proportion as its temperature is higher or lower. The prevailing winds of the temperate zone coming from the west, and sweeping, as they do, over the broad expanse

of the Pacific ocean, lap up the water, and carry it on their wings until, as they go northward, they become so chilled that they are obliged to deposit it. In winter, when the sun is south of the equator, this point is reached at about latitude 30° , where the deposition of moisture is begun, and as the winds get cooler in proportion as they get further and further away from the sun and toward the north, the precipitation of moisture increases in a direct ratio with the distance, until by the time Puget Sound is reached the winds are found to be in an almost constant state of precipitation. This deposit is in the shape of rain in the valleys and lowlands, and snow in the mountains.

On the other hand, in the summer, when the sun is north of the equator, the scene of this cooling process is moved further north, and the region that has been so generously supplied with rain during the winter gets none at all in summer, because the atmosphere does not become sufficiently cooled off to make any deposits until it gets quite far to the northward.

South of latitude 42° summer showers are almost unknown, saving in exceptional circumstances, where mountain ranges attract clouds and cause precipitation. In the Yosemite valley showers are frequent, even in the summer months. Another cause acts in conjunction with the one already mentioned. In summer, as has been before stated, the prevailing westerly winds are often deflected, and sometimes overpowered, by winds from the north. These north winds not only have no moisture to spare, but they are ravenously thirsty, and so gather up and appropriate every particle of moisture they find on their way.

Any one who has been long enough in California to be

at all familiar with its climatic phenomena does not need to be told of the withering, blasting effect of the north wind. It not only dries up vegetable matter and sucks the very life out of it, but animal life is also affected. Even man, the aristocrat of creation, is obliged to succumb to its influence. It penetrates the very marrow of his bones, and makes him feel that his birthright renders him an Ishmaelite indeed, whose mission it is to be at enmity with his race. Any one who can show an amiable disposition, and be ready to do his needy fellow-creature a kindness on the third day that the wind has been in the north, may be set down as one among a thousand! Fortunately these north winds seldom continue more than three days in succession, or there is no knowing to what horrible extremities the people would be driven.

On the banks of the Sacramento, in the month of May, the writer saw the leaves of sycamore trees, which had unfolded and almost reached maturity of size, scorched and withered and killed, as totally blasted as though a fire had been kindled beneath the trees and the flames had reached and destroyed them. This was the work of a north wind which had prevailed a week or two before. And woe to the unfortunate sufferer who has a rheumatic affection lurking anywhere in his bones! The north wind will be sure to search it out and waken it into activity. Let such an one get on the south side of the house, and bar the door and shut the window, if perchance he can keep out the enemy, for, if he do not, if he be once found, such torments will rack his bones as demons might delight to torture their victims with!

The two chief elements of climate, temperature and

rain-fall, have now been considered, and enough said to show the general laws by which they are governed and the influence they exert. There remain other facts and considerations that go to show why the climate differs so widely in the different parts of California.

There are many local causes, such as elevation, or protection by means of mountains, or trend of coast, or other peculiarity that may affect a given locality. This is true to such an extent that it is impossible to give any general description of the climate of California that will be correct and satisfactory. The locality must be defined if a true and authentic account would be given; still, so far as it is possible to generalize, it is well to do so. California may, therefore, be said to have two climates,—the land and the sea climates. The former is dry and hot from April to November; the latter damp and cool. If one wishes to know the climate of a given place, the first thing to be ascertained is, to which of the two climates the place is subjected. Those parts of the State that are contiguous to the ocean are, of course, under the jurisdiction of the sea climate, and consequently have no oppressive heat and no disheartening cold. They are kept in a state of perpetual comfort by the coolness and evenness of the ocean temperature. The water along the coast, under the influence of the Japan current, stands at from 52° to 54° all the year round. This equability is imparted to the atmosphere so that it is preserved from any great variation of temperature.

In San Francisco the mean difference between the summer and winter temperature is only eight degrees. This is only one of many marked peculiarities in the climate of

this queen city of the Pacific coast. Take it altogether, the climate is quite anomalous and difficult to be understood by those who have not had the chance of becoming personally acquainted with its peculiarities. The ladies wear their fur collars all the year, and gentlemen do not give the moths an opportunity to make feasts of their overcoats, because they are in almost constant requisition. Even on our nation's birthday, a heavy blanket-shawl would be essential to comfort if a ride in an open buggy were indulged in. In such a climate it does not seem so strange as it sometimes does in the sweltering heat of an eastern Fourth of July, that our fathers ventured to allow themselves to get warmed up and excited enough to pledge "their fortunes, their lives, and their sacred honors" to any cause whatsoever, if that cause was to be sustained by fighting! And yet, in this same place, where in July and August you draw your fur collar about your neck as closely as possible, and, if you are intending to cross the bay, put an additional pin in your blanket shawl, delicate exotics blossom in the yards perennially. There is no time when you cannot gather a bouquet of roses, geraniums, verbenas and pinks, while you see in almost every dooryard such bunches of calla-lilies, with their large, trumpet-shaped blossoms, arrayed in the color, if not the odor, of sanctity, as would delight the imagination of an eastern florist to even dream of. How are these two sets of circumstances—these perpetual furs and perpetual flowers—these blanket-shawls in July and greenness all the year to be reconciled and accounted for?

San Francisco is in the debatable land where the sea and the land climates always strive together, with victory

always inclining to the side of the former. It is situated on a peninsula, with the ocean on the west and the bay of San Francisco on the east, thus affording an unusually good opportunity for the wind to sweep over it and do whatsoever it pleases. The Golden Gate and the bay of San Francisco are the only effectual break—the only facile communication between the coast and the interior valleys. In summer, when the valleys are heated up and vacuums are occasioned by the rising of the hot air, the cool wind from the ocean, in its haste to rush in and fill the vacancies, gets very much in earnest, and blows over the peninsula in a tempestuous manner. The hotter it is in the valleys the harder the wind blows, so that, when there is an incipient hurricane in San Francisco it may always be inferred that they are having a hot time of it in the valleys. On account of this connection between the ocean and the interior valleys by means of the Golden Gate and the bay, San Francisco is more exposed to the wind during summer than any other place on the coast. Even Oakland, but eight miles distant, on the other side of the bay, has a perceptibly milder and more propitious summer climate, because by the direction of the coast it has some protection from the power of the ocean winds. There are many places on the coast for which nature has kindly provided some shield by projecting a headland, or indenting a bay, so as to secure at least partial immunity from the rough blasts from the sea. Santa Cruz is one of these favored spots. Situated on a cove in the bay of Monterey, it is protected by headlands from the roughness of the ocean winds, and made so attractive that it has become a place of much resort, insomuch that it is called the Newport of California.

Following the coast down to Point Concepcion, it will be seen that there is a sudden and sharp change in its direction. Instead of the southeastern course it has kept heretofore, it makes an abrupt turn and the trend is almost due east for about seventy miles. As the sea-breeze is from the west, it is apparent that while the trend of the coast is in the same direction, the wind cannot strike it fairly, and yet there can well be enough of its cool, invigorating influence felt to keep the land in a state of perpetual comfort.

Santa Barbara is not far from the center of this favored spot, and has the additional advantage of a southern exposure, which secures an unusual supply of sunshine.

Perhaps the pleasantest characteristic of this coast climate is its equability. Along the coast it is never hot and never cold. There are not many mornings in the whole year when a little fire does not add to the comfort; indeed, there are few mornings when you can really be comfortable without one. Yet, as soon as the sun is up a little way, if you can get yourself under its influence, its heat will be sufficient, and the fire may be permitted to go out.

It may be laid down as a general principle, that whenever and wherever you get away from the influence of the sea-breeze the weather will be warm in summer, oftentimes intensely hot, except where the influence of the sun is counteracted by elevation. In the mountainous regions there are valleys so lifted up and protected that they have climates secured to them so nearly perfect that only a determined grumbler could find fault with them. There is a large extent of country that lies between the jurisdiction of the sea and the land climate, and is affected by both.

The valleys opening into the bay of San Francisco are all subject to this double influence. The heat of the land climate is so modified by the cool breeze from the ocean as to result in a compound that is generally comfortable and pleasant.

The sea-breeze does not seem to be unduly inclined to confine its attentions to the coast. Wherever there is a cleft in the mountain, or an opening made by a river, it pours through and uses its influence to assuage the heat of the inland valleys. It comes in at the Golden Gate without let or hindrance, and as it does nowhere else. It strikes violently against the Contra Costa hills on the other side of the bay. These hinder its further progress in that direction, and it is thus deflected and turned aside. One part of the divided current goes toward the northwest, the other toward the southeast, in both cases following the course of the bay. Hence at San José, below the southern extremity of the bay, the trade-wind or sea-breeze comes as a northwest wind; and at Benicia, on the north end of the bay, it comes as a southwester. Spreading out like a fan, it finds its way into all the valleys and inlets that open into the bay. Everywhere it is invigorating, everywhere health-giving, except in cases where the lungs are diseased or over-sensitive. Then places where it comes in its full strength must be avoided.

The effect of the wind blowing so constantly in one direction is curiously visible in the trees, which, being unable to resist the constant strain, bend so continually before the blast that they at length depart entirely from the perpendicular, and show rather a grovelling disposition for anything that was created to stand upright. Among

the live-oaks in and around Oakland, there can scarcely one be found that has maintained its uprightness in the face of all this opposition. At the point where the wind has fair and full sweep the trees look as though they had been sent for and were going as fast as they could, and all in one direction. Some of them are so nearly horizontal that it does not seem as though it would be a very difficult thing to walk up to the top of them.

As has been before stated, there is a sort of correlation of forces—a balance in trade—between the sea-breeze and the heat in the valleys. Whenever the sun shines with unusual power, and heats up the valleys to an unwonted degree, causing the rarefied air to rise and hurry away, the cold air from the sea comes to fill the vacuum, and makes the greater haste according as the vacuum is greater. This interchange keeps everything in motion, and the wind in San Francisco is a pretty good thermometer for the Sacramento and San Joachin valleys. In September the sun has gone too far to the south to succeed so well in heating up the valleys, and the wind from the ocean has no cause to interfere; hence there is a cessation of its activity, and in that month there is a little touch of summer on the coast. It is uniformly the hottest month in the year everywhere on the sea-coast.

It is a misnomer to call the season winter that alternates with the summer in California. It is a long, bright spring, made so by the rains which are expected in November, but do not always come until December. After a few showers the hills put on their garments of beauty, greenness spreads rapidly over their brown, parched sides, and everything assumes the fresh, inspiring look of spring. The farmers

begin to plow and sow their fields; and the sooner the seed is in after the rains begin the better. In almost every part of the State, in an average season, a wheat crop is secure if the seed is put into the ground in time to have the benefit of the greater part of the winter rain. More rain falls in December, as a general thing, than in any other month. In January there are many bright days when the sky is so serene and the air so pure that it seems to be, and really is, a luxury to live. Vegetation grows rapidly all through the month, and has but little conflict in doing so. There are occasional frosts, but the ground is never stiffened by cold.

Then comes the period between the early and the latter rains. This is sometimes longer and better defined than it is at others, but it is usually measured by the month of February. The latter rains are of vital importance to the crops. The seed is now in the ground, or should be, and its growth and maturity depend in great measure upon the copiousness of these rains. If the latter rain is abundant, the crop may be regarded as secure.

It will be inferred from what has been already said that the rainy season is not a time of perpetual rain. The fact is quite otherwise. There are often many days in succession without a drop of rain, and the brilliancy of the skies and the purity of the atmosphere are something wonderful, and beautiful as wonderful. Those who have made their only visit to California during the heat and dust of the summer, it is safe to say, know but little of its beauty and its glory.

The air, purified by the rain, becomes so transparent that distance seems to be annihilated. If it were really true that the gates were ajar, it would seem as though one could actually look within and see the heavenly city,

"Jerusalem the golden." It was the writer's pleasant fortune to be in Oakland for the first time during this season. These strange and wonderful appearances occasioned a state of mind so bordering on ecstasy that the tension was acute, and the effect from excess of pleasure almost painful. Afterward, familiarity made this loveliness less exciting; but no familiarity could ever make such scenes so common that the heart would not lift itself up in glad thankfulness to the great Creator, who not only made the world beautiful, but so stamped His image on the hearts of His children as to make them capable of appreciation. Go where you will on the Contra Costa mountains and the foot-hills back of Oakland, you always seem to look right out of the open Golden Gate to the limitless ocean beyond. Brightness and beauty are everywhere, above, beneath and around you. Life has a new zest and a new meaning given to it when you can breathe such air and look out upon such loveliness; imagination is helped in its conceptions of that "land of pure delight" about whose glories we can only faintly dream here, but about which we hope to know so much hereafter.

There are many of these halcyon days scattered through the winter. In truth, during some winters they are the rule and rainy days are the exception, for the rain has a strong propensity to fall in the night, very benevolently vacating when the night is past, and leaving the "sun to rule by day." The conditions are more favorable for the falling of the rain by night than by day. No matter how heavily laden the clouds are, or how ready soever they may be to discharge their contents, the sun is so potent that it compels them to scatter, and take with them the moisture

with which they are charged. But in the night the sun is out of the way, and the rain-clouds have the field all to themselves. They improve their opportunity, and sometimes pour down the rain without stint or limit. The first winter that the writer spent in California, there was not a day when the rain was continuous, not a day a part of which could not be pleasantly spent out-of-doors. But that was an exceptionally dry winter, as the next was an exceptionally wet one, during which there was at one time three weeks with only four pleasant days in all the twenty-one.

The mean annual temperature varies less in a given range of latitude on the Pacific coast than it does on the Atlantic. Going northward on the Atlantic sea-board, the mean annual temperature is found to diminish one degree for every degree of latitude. But on the western coast there is a difference of but two or three degrees in all the nine degrees of latitude between the mouth of the Columbia river and Monterey. And this difference does not always correspond with the difference in the latitude. Local causes come in to modify natural conditions, and exert other influences. In the interior the climate is greatly diversified. Each valley and mountain side seems to have one of its own.

The rains cease in April or May, and on the coast the trade-winds begin to blow, but they are as yet only in their infancy. Their mature strength is in reserve for July and August, when they hold high carnival. The wind rises every morning about ten o'clock, or a little later, and continues through the remainder of the day. As has been already stated, September is the hottest month of the year

on the coast, because the trade-winds have ceased, and the land is given over to the influence of the sun.

The mean temperature of San Francisco is 56° , it being 60° in summer and 52° in winter. There is scarcely any fall of temperature during the night. Soon after the sea-breeze sets in, in the morning, the mercury falls from 65° to 53° or 54° , and remains very nearly stationary from that time till the sun brings it up the next morning. This operation is gone through with three-fourths of the days during June, July and August. The nights are never uncomfortably warm, as is shown by the temperature. Blankets are in requisition every night in the year. Inland the sun has a better chance for victory, and does not show himself a very merciful conqueror. Away from the reach of the sea-breeze the heat is sometimes terrific. In the upper Sacramento valley, during the summer, the mercury disdains to stop anywhere in the nineties, but goes on up to 100° , to 110° , and even to 118° in the shade! Yet even that degree is more endurable than a somewhat lower degree in other places, on account of the extreme dryness of the atmosphere and the coolness of the nights. There being no clouds, evaporation is rapid, and very soon after the sun is gone down the air becomes cool, and so refreshing sleep can be obtained. In the San Joachin valley, also, when beyond the reach of the sea-breeze, the heat is intense. But, notwithstanding the intensity of the heat, sun-strokes are nearly or quite unknown. There is no authentic account of any case of sun-stroke that terminated fatally. Probably, the dryness of the atmosphere, already referred to, has something to do with this immunity.

Another of the pleasant peculiarities of the climate of

California is, that there are no thunder-showers. There being no clouds to hold the electricity, the country is secure from the celestial pyrotechnics that occasion so much terror among the weak-nerved in other parts of the country. There is an occasional flash of lightning, and the rumble of thunder is sometimes heard. But these come in the winter, when they come at all, and are but distantly related to the terrific explosions which occasion alarm, and sometimes death, elsewhere.